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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/617,878 | 07/10/2003 | Robert Lin | 71604 | 3424 |

7590 02/07/2006

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EXAMINER

OH, TAYLOR V

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1625

DATE MAILED: 02/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Suppl
Notice of Allowability

Application No.

10/617,878

Examiner

Taylor Victor Oh

Applicant(s)

LIN, ROBERT

Art Unit

1625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/28/05.
2. ☒ The allowed claim(s) is/are 1-34.
3. ☒ The drawings filed on 10 July 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date <u>4/26/05</u> . |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date <u>11/04 & 2/05</u> | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input checked="" type="checkbox"/> Other <u>See Continuation Sheet.</u> |

Taylor Victor Oh
3/8/06

Examiner's Amendment and Reasons of Allowance

The Status of Claims

Claims 1-34 are pending.

Claims 1-34 have been allowed.

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with an attorney of record, Mr. Steven A. Owen on 5/2/05.

I. The application has been amended as follows:

In claim 1, line 2 on page 4 (amendment dated on 2/1/05):

The phrase "-- , produced in the manufacture of an aromatic carboxylic acid , comprising: --" after the phrase " an offgas stream " has been replaced with the phrase " said process comprising the following steps:".

In claim 1, line 12 on page 4 (amendment dated on 2/1/05):

The phrase " -- comprising an organic rankine cycle or a kalina cycle --" after the phrase " a power cycle" has been added.

In claim 8, line 2 on page 5 (amendment dated on 2/1/05):

The phrase " -- a kallina cycle --" has been deleted after the word " or ".

In claim 9, line 9 on page 5 (amendment dated on 2/1/05):

The phrase “ -- comprising an organic rankine cycle or a kalina cycle --” after the phrase “ a power cycle” has been added.

In claim 10, line 2 on page 6 (amendment dated on 2/1/05):

The phrase “ -- a kallina cycle --” has been deleted after the word “ or ”.

In claim 19, line 10 on page 7 (amendment dated on 2/1/05):

The phrase “ -- comprising an organic rankine cycle or a kalina cycle --” after the phrase “ a power cycle” has been added.

In claim 26, line 2 on page 8 (amendment dated on 2/1/05):

The phrase “ -- a kallina cycle --” has been deleted after the word “ or ”.

In claim 27, line 4 on page 9 (amendment dated on 2/1/05):

The phrase “ -- comprising an organic rankine cycle or a kalina cycle --” after the phrase “ a power cycle” has been added.

In claim 34, line 2 on page 10 (amendment dated on 2/1/05):

The phrase “ -- a kallina cycle --” has been deleted after the word “ or ”.

II. The following is an examiner's statement of reasons for allowance:

- The close reference for the current invention is Graham et al (WO 02/06201 A1).

Graham et al discloses the process of preparing an aromatic carboxylic acid in the presence of a catalyst and one or more precursors of the aromatic carboxylic acid with an oxidant in an aqueous solvent comprising water under supercritical conditions; during the process, the heat-accepting fluid, such as water, can be used to raise high pressure steam which can be superheated by external heat and fed to the a high efficiency condensing steam turbine to recover power.

The instant invention, however, differs from the prior art in that the claimed working fluid is recovered in an organic rankine cycle which uses a halo-carbon refrigerant or a kalina cycle which uses an ammonia, whereas the Graham et al has employed water as the heat-accepting fluid for the high efficiency condensing steam turbine; furthermore, the claimed working fluid has a boiling point between -100°C and 90°C , such as propane, isopropane, isobutene, butane, isopentane, n-pentane, ammonia, R134a, R11, and R12 unlike the use of water in the prior art [note that R134a (1,1,1,2-tetrafluoro ethane), R11 (CCL_3F), and R12 (CCl_2F_2) are well-known refrigerants to the skilled artisan in the art as shown in Sato et al (US 5,804,096)]; therefore, with respect to the recovery of the enthalpy from the process, the claimed process and the prior art process are different from each other. Furthermore, there is no motivation in the prior art to arrive at the claimed invention. In addition, unless all limitations of the claims are met, there is no prior art rejection. See In re Zurko 59 USPQ 2d 1690 (Fed Cir. 1991) and In re Lee, 61 USPQ 1430 (Fed Cir. 1991).

Therefore, the claimed invention would not have been obvious to the person with an ordinary skill in the art.

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Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning the communication after allowance such as sending all post-allowance correspondence should be directed to "Box Issue Fee" or faxed directly to PUBS at 703-305-8755. This will expedite the process of these papers.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yang v On
5/2/55

Cecilia J. Tsang
Cecilia J. Tsang
Supervisory Patent Examiner
Technology Center 1600

TABLE 2

| Stream Name | 304 | 305 | 306 | 307 | 308 | 309 | 310 | 501 | 502 | 503 | 504 |
|------------------|-------|-------|-------|-------|-------|-------|-------|------|------|------|------|
| Mass Flow lb/hr | | | | | | | | | | | |
| NITROGEN | 5919 | 5908 | 11 | 5886 | 33 | 0 | 33 | 0 | 0 | 0 | 0 |
| OXYGEN | 270 | 269 | 1 | 267 | 3 | 0 | 3 | 0 | 0 | 0 | 0 |
| WATER | 3764 | 1551 | 2213 | 322 | 3442 | 0 | 3442 | 0 | 0 | 0 | 0 |
| HOAC | 47 | 19 | 28 | 6 | 41 | 0 | 41 | 0 | 0 | 0 | 0 |
| PENTANE | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8400 | 8400 | 8400 | 8400 |
| Total Flow lb/hr | 10000 | 7748 | 2252 | 6481 | 3519 | 0 | 3519 | 8400 | 8400 | 8400 | 8400 |
| Temperature C | 150.0 | 130.0 | 130.0 | 90.0 | 90.0 | | 50.0 | 35.0 | 73.2 | 52.7 | 34.6 |
| Pressure psi | 145.2 | 144.2 | 144.2 | 143.2 | 143.2 | 141.2 | 141.2 | 44.3 | 43.3 | 15.0 | 14.0 |
| Vapor Frac | 1 | 1 | 0 | 1 | 0 | | 0 | 0 | 1 | 1 | 0 |
| Liquid Frac | 0 | 0 | 1 | 0 | 1 | | 1 | 1 | 0 | 0 | 1 |